

REMARKS

An Excess Claim Fee Payment Letter is attached hereto to cover the cost of any excess claims added by this Amendment.

Claims 1-13 and 24-34 are all the claims presently pending in the application. Claims 1, 5, 7, 24, and 27-30 have been amended to more particularly define the invention. Claim 34 has been added to claim additional features of the claimed invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Applicant gratefully acknowledges that claims 9-10, 27 and 29 would be allowable if rewritten in independent form. Applicant notes that the claim 24 has been amended to include the features of claim 27. Therefore, claim 24 as well as claims 25-33 which depend from claim 24, are in condition for immediate allowance.

Applicant respectfully submits that the remaining claims 1-13 and new claim 34 are allowable and, therefore, respectfully declines to rewrite claims 9 and 10 at this time.

Applicant further gratefully acknowledges that claims 28 and 30 have been amended to address the Examiner's concerns. Therefore, these claims are in condition for immediate allowance.

Claims 5, 28 and 30 stand rejected under 35 U.S.C. § 112, second paragraph. Claims 7-8 and 11-13 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Egusa, et al. (U.S. Patent No. 5,294,810). Claims 24-26 and 31-33 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Japanese Application No. 10-102051 or by Tamura, et al. (U.S. Patent No. 5,858,564). Claims 1-6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese Application No. 9-268284.

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention is directed to an electroluminescent device which includes an

anode, a cathode and at least one organic layer sandwiched between the anode and the cathode, the organic layer including at least a light emitting layer which includes at least one of a perylene compound (e.g., as recited in claim 1), a bisanthrene compound (e.g., as recited in claim 7), and a terylene compound (e.g., as recited in claim 24), alone or in combination.

Conventional EL devices include light-emitting layers (e.g., red light-emitting layers) which do not provide sufficient brightness, color purity, efficiency and longevity.

The claimed organic EL device, on the other hand, has at least one organic layer including at least a light emitting layer which includes at least one of a perylene compound (e.g., as recited in claim 1), a bisanthrene compound (e.g., as recited in claim 7), and a terylene compound (e.g., as recited in claim 24). The claimed device is, therefore, a brighter and more color pure organic EL device than conventional devices.

II. THE 35 USC §112, SECOND PARAGRAPH REJECTION

Claims 5, 28 and 30 stand rejected under 35 U.S.C. §112, second paragraph. The claims have been amended, above, to overcome this rejection.

Specifically, claim 5 has been amended to depend from claim 4, and claims 28 and 30 have been amended to recite “*wherein each of said aryl groups Ar¹ and Ar² has a substituent*”.

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw this rejection.

III. THE PRIOR ART REFERENCES

A. The Egusa Reference

The Examiner alleges that Egusa teaches the claimed invention of claims 7-8 and 11-13. Applicant submits, however, that there are elements of the claimed invention which are neither taught nor suggested by Egusa.

Egusa discloses in an organic electroluminescent device including first and second electrodes opposite to each other and a multi-layered body which is sandwiched between these electrodes and consists of a plurality of organic films including a light-emitting layer (Egusa at Abstract).

However, Egusa does not teach or suggest an organic layer including at least “a light emitting layer which includes a bisanthrene compound represented with the chemical formula C2” as recited, for example, in claim 7.

As noted above, unlike conventional EL devices which include light-emitting layers which do not provide sufficient brightness, color purity, efficiency and longevity (Application at page 3, lines 20-22), the claimed organic EL device (of claim 7) has at least one organic layer including at least a light emitting layer which includes a bisanthrene compound (Application at page 6, line 16-page 8, line 4; page 12, lines 6-16; page 26, line 6-page 28, line 5). The claimed device is, therefore, a brighter and more color pure organic EL device than conventional devices (Application at page 84, lines 7-11).

Clearly, these features are not taught or suggested by Egusa. Indeed, the Examiner alleges that Egusa discloses the claimed invention at col. 19, lines 10-45. However, this is clearly incorrect.

Specifically, the Examiner attempts to equate a second organic film 5 (Egusa at col. 19, lines 25-31) with the light-emitting layer of the claimed invention. However, the second organic film 5 is not the same as the claimed compound C2 as suggested by the Examiner. Instead, as recited in claim 7, in compound C2, “*R¹ to R¹⁴ each independently represents a hydrogen atom, a halogen atom, a hydroxyl group, a substituted or unsubstituted amino group, a nitro group, a cyano group, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aromatic heterocyclic group, substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryloxy group, a substituted or unsubstituted alkoxycarbonyl group, or a carboxyl group*”.

However, if the second organic film 5 of Egusa is compared to compound C2 of the claimed invention, it is clear that Egusa does not include either R⁶ or R¹³ which is a hydrogen, as alleged by the Examiner. Instead, one of R⁶ or R¹³ is a structure comprising 10 benzene rings. That is, the film in Egusa includes a second portion which is a mirror image of the first portion. Clearly, this does not teach or suggest the claimed invention in which R⁶ or R¹³ may represent “a hydrogen atom, a halogen atom ... or a carboxyl group” as recited in claim 7.

Further, neither does Egusa teach or suggest “wherein any two of R¹ to R⁷ may form a

ring, and any two of R⁸ to R¹⁴ may form a ring” as recited in claim 7. In short, the compound C2 defined in the amended claim 7 is structurally distinguishable from Egusa. Specifically, if R¹ and R¹⁴ or R⁷ and R⁸ in the compound C2 were linked to each other to form a condensed ring, a conjugate would expand too broadly. Hence, a light-emitter including such a compound C2 would emit a light having a wavelength in a range of an infra-red ray, resulting in that such a light-emitter cannot be used for a display which is required to emit a visible light.

Thus, the compound C2 defined in claim 7 in which any two of R¹ to R⁷ may form a ring, and any two of R⁸ to R¹⁴ may form a ring, is structurally different from the compound disclosed in Egusa which allows R¹ and R¹⁴ or R⁷ and R⁸ to link to each other to form a condensed ring.

Therefore, Applicant submits that there are elements of the claimed invention that are not taught or suggest by Egusa. Therefore, the Examiner is respectfully requested to withdraw this rejection.

B. The JP '284 Reference

The Examiner alleges that JP '284 teaches the claimed invention of claims 1-6. Applicant submits, however, that there are elements of the claimed invention which are neither taught nor suggested by JP '284.

The JP '284 reference discloses a material for an organic electroluminescent device that can allegedly emit a bright light, is hardly deteriorated and has a high reliability (JP '284 at [0005]). The device includes a material which includes a substituted C6-C20 arylene group (JP '284 at Abstract).

However, JP '284 does not teach or suggest an organic layer including at least *“a light emitting layer which includes a compound represented with the chemical formula C1”* as recited, for example, in claim 1.

Clearly, this feature is not taught or suggested by JP '284. In short, a compound used in an organic EL device is required to have not only functions of introduction of holes and electrons from an electrode, transportation and blocking of holes and electrons, recombination of holes and electrons for formulating an “exciting” condition, and transition

to light-emission for producing optic energy, but also fitness to a film-forming process, a film-forming capability, and ability to present stability in a resultant film.

The compound C1 defined in claim 1 provides conformation presented by combining a planar perylene skeleton and a di-aryl amino group to each other, and a molecular orbital profile associated with the conformation to thereby accomplish the above-mentioned functions and characteristics.

JP 9-268284 merely discloses a compound including an allylene group to which two di-aryl amino groups are combined. It would be impossible for those skilled in the art not only when the present application was filed, but also even now to expect the compound C1 to have the above-mentioned functions and characteristics, based on the cited reference JP 9-268284.

Further, the Examiner alleges that JP '284 discloses the claimed invention at paragraphs [0018]-[0021], [0051], [0052], [0061], [0063] and [0081]. However, this is clearly incorrect. Nowhere in these paragraphs does the JP '284 reference teach or suggest the compound of formula C1 (e.g., a perylene compound (e.g., peri-dinaphthalene)).

For example, the JP '284 reference provides several examples of general formula 1 in Table 1 at paragraphs [0026]-[0036]. However, clearly none of these examples teaches or suggests the perylene compound of the present invention.

Therefore, while JP '284 may teach a substituted C6-C20 arylene group, JP '284 does not teach or suggest a perylene compound. Indeed, the device of JP '284 has a material with a completely different basic structure than that of the claimed invention.

Therefore, Applicant submits that there are elements of the claimed invention that are not taught or suggested by JP '284. Therefore, the Examiner is respectfully requested to withdraw this rejection.

IV. FORMAL MATTERS AND CONCLUSION

Applicant notes that the Abstract has been amended to address the Examiner's objection thereto. Further, the specification has been amended to clarify the formulas for compounds X1, X2 and X3 on pages 25-26 of the Application.

In view of the foregoing, Applicant submits that claims 1-13 and 24-34, all the claims

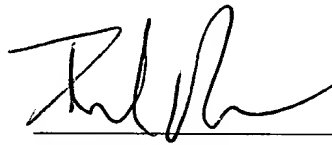
presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

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Phillip E. Miller
Registration No. 46,060

McGinn & Gibb, PLLC
8321 Old Courthouse Road, Suite 200
Vienna, VA 22182-3817
(703) 761-4100
Customer No. 21254